

## A New Whale Barnacle from Late Pleistocene Deposits at San Quintín Bay, Baja California

by

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(Plate 3)

Two isolated compartmental plates of a new species of the whale barnacle Cryptolepas Dall, 1872, were collected from late Pleistocene deposits at San Quintín Bay, on the Pacific Coast of Baja California. This new species represents the only known fossil record of the genus Cryptolepas, which until now has included only the living North Pacific species, C. rhachianecti Dall, 1872. The new species closely resembles C. rhachianecti, but the lamellar ribs of the shell of the former terminate distally in T-shaped flanges which form an outer wall (pl. 2, figs. 3, 4). In this respect, the new species resembles the genus Coronula Lamarck, 1802.

The whale barnacles including the genera Coronula, Cryptolepas, Tubicinella Lamarck, 1802, and Xenobalanus Steenstrup, 1851, form a morphologically allied group within the subfamily Coronulinae Leach. All of the species of these genera live partially or wholly embedded in the skin of cetaceans, as opposed to the platylepadid group of coronulines which have a diversity of hosts, but have never been found on cetaceans. The whale barnacles can be distinguished morphologically from other coronulines by the presence of an oral hood covering the cirri, and by the absence of the internal midribs, median parietal sulci, and parietal furrows which characterize the platylepadid-group.

Within their own group, the whale barnacles have attained a great deal of morphological diversity, apparently as a result of their individual habitats. The fossil record of the coronulines, hitherto restricted to species of the genus Coronula, is sparse, but the world-wide distribution of these fossils in deposits no older than late Miocene indicates that the whale barnacles have achieved their present diversification in a relatively short period of time.

Apparently Cryptolepas, Tubicinella, and Xenobalanus developed from Coronula, but until now, no intermediate forms have been found to substantiate this hypothesis. The lack of fossil specimens of these genera is evidently a result of the fragile nature of their shells. The shell of Coronula, which is only partially embedded in the skin of the whale and therefore exposed to the surrounding environment, is tough and stout, and difficult to disarticulate or break. However, the shells of Cryptolepas, Tubicinella, and Xenobalanus, which are totally buried in the whale's skin and are not exposed to the surrounding environment are friable and easily disarticulated or broken and would probably be reduced to fragments before being preserved. This theory is demonstrated by the new fossil species whose shell, although closely resembling that of Cryptolepas rhachianecti in most features, is structurally more similar to the shell of Coronula.

Pilsbry (1916, p. 279) must have envisioned such an intermediate form as represented by the San Quintín specimens in his statement concerning the origin of Cryptolepas rhachianecti:

"With the exception of the grooves of the sheath, nearly all of the differences from Coronula are degenerative changes apparently correlated with the protected station of the animal embedded in the skin of the host. An outer wall is no longer needed. The branches of the ribs, which in Coronula serve as buttresses, have become short and extremely variable."

Pilsbry also noted that among the species of Coronula, Cryptolepas rhachianecti most closely resembles Coronula (Cetopirus) complanata (Mörch, 1852) in its depressed exterior outline and cylindric body chamber, and he concluded

that *Cryptolepas* had been derived from such an ancestor. The discovery of compartmental plates of *Coronula complanata* in late Pliocene deposits at Cape Blanco, Oregon, supports Pilsbry's conclusion, although there are no authenticated Recent records of this species in the North Pacific.

The new fossil species of *Cryptolepas*, therefore, appears to be an intermediate, having all the characteristics of *Cryptolepas*, but retaining the outer wall of its Coronulid ancestor.

## Family BALANIDAE GRAY, emended

### Subfamily CORONULINAE LEACH, emended

#### Genus *Cryptolepas* DALL

*Cryptolepas* Dall, 1872, Proc. Calif. Acad. Sci., vol. 4, p. 300; Pilsbry, 1916, U. S. Nat. Mus. Bull. 93, p. 278; Kruger, 1940, in Bronn's Klass. u. Ordn. des Tierreichs, Bd. 5, Abt. 1, Buch 3, Teil 3, p. 453.

Type species: *Cryptolepas rhachianecti* Dall (by monotypy). Living on the California gray whale, *Rhachianectis glaucus* Cope. Subsequent authors (e. g., Pilsbry, 1916, p. 279; Cornwall, 1955, p. 44) have not retained the first "h" in the spelling of the specific name.

Range: Late Pleistocene, Baja California; Recent, North Pacific.

*Cryptolepas murata* ZULLO, spec. nov.

Dimensions:	Holotype	Paratype
	UCMP no.	UCMP no.
	34676	34677
Height:	10.3 mm.	12.1 mm.
Width of ribs:	8.4 mm.	10.1 mm.
Width of base of ribs:	11.1 mm.	12.5 mm.

Description: Two worn lateral compartmental plates; six parietal ribs per compartmental plate formed by four complete radial lamellar folds and two sutural half-folds; ribs unbranched or with one or two short, free-ending branches and terminating in T-shaped flanges forming a more or less complete outer wall; ribs composed of outer and inner lamellae; inner lamellae separated by closely-spaced, longitudinal septa, forming longitudinal tubes; ornamentation of ribs consisting of fine, closely-spaced, vertical striae crossed by distantly-spaced growth wrinkles; growth wrinkles prominent in apical half and fading in basal half; sheath transversely grooved, three-fourths height of shell; basal edge of sheath not projected, but nearly flush with lamellar folds below; sutural edges of radii intricately crenulated; opercular plates unknown.

The specific name is derived from the Latin "muratus" signifying "walled".

Holotype: University of California, Museum of Paleontology, no. 34'676 (pl. 3, figs. 1, 2, 3); paratype: UCMP no. 34'677 (pl. 3, figs. 4, 5).

Occurrence: UCMP locality no. A-8677. Late Pleistocene, San Quintín Bay, Baja California. One mile south of San Quintín pier at base of cliffs. This locality is identical to that described by Jordan (1924, p. 243). Jordan listed 225 species of invertebrates from this locality, including 13 not known to be living and several whose northern limits are presently south of this locality. It was concluded that this fauna could be correlated with the late Pleistocene warm water San Pedro fauna of Southern California.

Discussion: *Cryptolepas murata* differs from the living *C. rhachianecti* in the presence of an outer wall formed by T-shaped flanges at the ends of the ribs, and in the less complex branching of the ribs. Pilsbry (1916, p. 280) noted that a few individuals of *C. rhachianecti* he examined had one or more compartments with only three or four loops of the inner wall, and with rib branches parallel with and close to the upper sides of the ribs, forming a secondary, incomplete "outer wall". The terminal flanges of *C. murata*, however, are homologous with the terminal flanges forming the outer wall in the genus *Coronula*.

Darwin (1854, p. 413) observed that the shell of *Coronula complanata* is more completely buried in the skin of the whale than are the shells of other species of *Coronula*. Probably *Cryptolepas murata* was also deeply buried, approaching the habit of *C. rhachianecti*. The body chamber was probably cylindric with its base equal in size to its orifice. The exterior outline of the shell would therefore be approximately that of *C. rhachianecti* (pl. 3, figs. 6, 7).

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